UNITED STATES PATENT AND TRADEMARK OFFICE

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10/046,909	01/17/2002	Masayoshi Nishitani	24886	3391

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20529	7590	09/27/2005	CERVETTI, DAVID GARCIA

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ART UNIT	PAPER NUMBER
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DATE MAILED: 09/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>30 June 2005</u>.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-9</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-9</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>17 January 2002</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☒ Some * c)☐ None of:

       1.☒ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____.

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1.   Applicant's arguments filed June 30, 2005 have been fully considered but they

are not persuasive.

2.   Claims 1-9 are pending and have been examined.

Response to Amendment

3.   Braudaway teaches selecting a rectangular cluster of pixels and works on pixels

and adjacent pixels (columns 9-10, 16). Braudaway does not specify that the area has

to be of a predetermined or larger than a base value (i.e., more than one pixel in width).

A rectangular cluster of pixels is two dimensional, as is a line of pixels, i.e. using as unit

of measure a foot, and having a line one foot-wide by 100 foot long, still renders a

rectangular area, similarly, having as unit of measure a pixel, and having a line one

pixel wide by 100 pixels in length, also renders a rectangular area. The Mathematical

concept of line is one dimensional, but regarding digital images, a line of pixel data

cannot be defined as one dimensional, since an image of one pixel has those

dimensions, one pixel wide by one pixel high. Therefore, Braudaway concept of

rectangular cluster of pixels can be interpreted as a rectangular cluster of pixels, one

pixel wide by a larger than one number of pixels in length, or a ten-pixel by ten-pixel

rectangle (a special case of a rectangle, or degenerate rectangle). A line can, according

to this definition, applied to digital images, be interpreted as a rectangular cluster of

pixels of one pixel wide by a larger than one number of pixels in length.

4.   The combination of Braudaway and Powell still discloses the present invention

since, even though Powell's invention is not expressly directed to a "line", it would have

been obvious to one of ordinary skill in the art to apply the teachings of Powell to the

invention of Braudaway.

Claim Rejections - 35 USC § 103

5.   The text of those sections of Title 35, U.S. Code not included in this action can

be found in a prior Office action.

6.   **Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over**

Braudaway et al. (US Patent Number: 5,825,892, hereinafter "Braudaway"), and

further in view of Powell et al. (US Patent Number: 6,137,892, hereinafter

"Powell").

       Regarding claim 1, Braudaway teaches a digital watermarking apparatus

comprising: specifying means for specifying a line of pixel data included in received

image signals (column 8, lines 1-6); encryption data generating means for encrypting

the digital watermark and for outputting encryption data (column 7, lines 1-10).

Braudaway does not disclose expressly mixing means for comparing an average of

intensity values or color difference values of all pixels in the specified line in the

received image signals with an intensity value or a color difference value of each pixel in

a line adjacent to the specified line and in which the digital watermark is to be

embedded, to find, for all pixels in the adjacent line, a first counter value and a second

counter value, said first counter value indicating a number of pixels each of which has

an intensity value or a color difference value larger than the average, said second

counter value indicating a number of pixels each of which has an intensity value or a

color difference value smaller than the average, for transforming the intensity value or

the color difference value of each pixel in the adjacent line such that a relation between

the first counter value and the second counter value becomes a preset relation

according to a first value or a second value of the encryption data from said encryption

data generating means, and for outputting the received image signals as watermarked

image signals. However, Powell teach mixing means for comparing an average of

intensity values or color difference values of all pixels in the specified are in the received

image signals with an intensity value or a color difference value of each pixel in a are

adjacent to the specified are and in which the digital watermark is to be embedded

(column 4, lines 10-34), to find, for all pixels in the adjacent area, a first counter value

and a second counter value, said first counter value indicating a number of pixels each

of which has an intensity value or a color difference value larger than the average, said

second counter value indicating a number of pixels each of which has an intensity value

or a color difference value smaller than the average, for transforming the intensity value

or the color difference value of each pixel in the adjacent area (column 7, lines 5-40),

such that a relation between the first counter value and the second counter value

becomes a preset relation according to a first value or a second value of the encryption

data from said encryption data generating means, and for outputting the received image

signals as watermarked image signals (column 4, lines 52-67, column 5, lines 1-30).

Therefore, it would have been obvious to one having ordinary skill in the art at the time

the invention was made to use difference of averages to create the digital watermark in

the system of Braudaway. One of ordinary skill in the art would have been motivated to

perform such a modification to permit modification of the image without losing the digital

signature (Powell, column 1, lines 37-49).

Regarding claim 2, the combination of Braudaway and Powell teaches the

limitations as set forth under claim 1 above. Furthermore, Powell teaches wherein said

mixing means comprises: average calculating means for calculating the average of the

intensity values or the color difference values of the pixels in the specified line of the

received image signals (column 4, lines 22-35); counter value calculating means for

comparing the average with the intensity value or the color difference value of each

pixel in the adjacent line to calculate, for all pixels in the adjacent line, the first counter

value and the second counter value, said first counter value indicating the number of

pixels each of which has an intensity value or a color difference value larger than the

average, said second counter value indicating the number of pixels each of which has

an intensity value or a color difference value smaller than the average; counter value

comparing means for comparing the first counter value and the second counter value;

and transforming means for transforming the intensity values or the color difference

values of all pixels in the adjacent line (column 5, lines 1-15) such that, when the value

of the encryption data from said encryption generating means is the first value, said

counter value comparing means gives a comparison result indicating that the first

counter value is larger than the second counter value and such that, when the value of

the encryption data from said encryption generating means is the second value, said

counter value comparing means gives a comparison result indicating that the first

counter value is smaller than the second counter value, wherein the transformed signals

are output as the watermarked image signals, the intensity value or the color difference

value or each pixel in the adjacent line of the transformed signals being transformed by

said transforming means according to the value of the encryption data (column 4, lines 1-67, column 5, lines 1-24, column 8, lines 1-5).

Regarding claim 3, Braudaway teaches a digital watermarking method comprising: a first step for specifying a line of pixel data included in received image signals (column 8, lines 1-6); a second step for encrypting a digital watermark and for outputting encryption data (column 7, lines 1-10). Braudaway does not disclose expressly a third step for comparing an average of intensity values or color difference values of all pixels in the specified line in the received image signals with an intensity value or a color difference value of each pixel in a line adjacent to the specified line and in which the digital watermark is to be embedded, to find, for all pixels in the adjacent line, a first counter value and a second counter value, said first counter value indicating a number of pixels each of which has an intensity value or a color difference value larger than the average, said second counter value indicating a number of pixels each of which has an intensity value or a color difference value smaller than the average, and a fourth step for transforming the intensity value or the color difference value of each pixel in the adjacent line such that a relation between the first counter value and the second counter value becomes a preset relation according to a first value or a second value of the encryption data and for outputting the received image signals as watermarked image signals. However, Powell teach a third step for comparing an average of intensity values or color difference values of all pixels in the specified line in the received image signals with an intensity value or a color difference value of each pixel in an area adjacent to the specified area and in which the digital watermark is to be

embedded (column 4, lines 10-34), to find, for all pixels in the adjacent area, a first

counter value and a second counter value, said first counter value indicating a number

of pixels each of which has an intensity value or a color difference value larger than the

average, said second counter value indicating a number of pixels each of which has an

intensity value or a color difference value smaller than the average, and a fourth step for

transforming the intensity value or the color difference value of each pixel in the

adjacent area (column 7, lines 5-40), such that a relation between the first counter value

and the second counter value becomes a preset relation according to a first value or a

second value of the encryption data and for outputting the received image signals as

watermarked image signals (column 4, lines 52-67, column 5, lines 1-30). Therefore, it

would have been obvious to one having ordinary skill in the art at the time the invention

was made to use difference of averages to create the digital watermark in the system of

Braudaway. One of ordinary skill in the art would have been motivated to perform such

a modification to permit modification of the image without losing the digital signature

(Powell, column 1, lines 37-49).

Regarding claim 4, the combination of Braudaway and Powell teaches the

limitations as set forth under claim 3 above. Furthermore, Powell teaches wherein said

third step comprises: a fifth step for calculating the average of the intensity values or the

color difference values of the pixels in the specified line of the received image signals

(column 4, lines 22-35); and a sixth step for comparing the average with the intensity

value or the color difference value of each pixel in the adjacent line to calculate, for all

pixels in the adjacent line, the first counter value and the second counter value, said first

counter value indicating the number of pixels each of which has an intensity value or a

color difference value larger than the average, said second counter value indicating the

number of pixels each of which has an intensity value or a color difference value smaller

than the average, and wherein said fourth step comprises: a seventh step for comparing

the first counter value and the second counter value; and an eighth step for

transforming the intensity values or the color difference values of all pixels in the

adjacent line (column 5, lines 1-15) such that, when the value of the encryption data is

the first value, a comparison result indicating that the first counter value is larger than

the second counter value is obtained and such that, when the value of the encryption

data is the second value, a comparison result indicating that the first counter value is

smaller than the second counter value is obtained (column 4, lines 1-67, column 5, lines

1-24, column 8, lines 1-5).

Regarding claim 5, Braudaway teaches a digital watermark reproducing

apparatus comprising: specifying means for receiving digitally watermarked image

signals as input signals and for specifying a line of pixel data, said digitally watermarked

image signals being generated by transforming signals in a line adjacent to the specified

line of the image signals according to a value of encryption data generated by

encrypting a digital watermark (column 16, lines 1-30). Braudaway does not disclose

expressly extracting means for comparing an average of intensity values or color

difference values of all pixels in the specified line in the digitally watermarked image

signals with an intensity value or a color difference value of each pixel in the adjacent

line to find, for all pixels in the adjacent line, a first counter value and a second counter

value, said first counter value indicating a number of pixels each of which has an

intensity value or a color difference value larger than the average, said second counter

value indicating a number of pixels each of which has an intensity value or a color

difference value smaller than the average, and for extracting from the adjacent line the

encryption data which is determined to be a first value or a second value according to a

relation between the first counter value and the second counter value; and a decrypting

means for decrypting the extracted the encryption data to an original watermark for

output. However, Powell teaches extracting means for comparing an average of

intensity values or color difference values of all pixels in the specified line in the digitally

watermarked image signals with an intensity value or a color difference value of each

pixel in the adjacent line (column 6, lines 12-28) to find, for all pixels in the adjacent line,

a first counter value and a second counter value, said first counter value indicating a

number of pixels each of which has an intensity value or a color difference value larger

than the average, said second counter value indicating a number of pixels each of

which has an intensity value or a color difference value smaller than the average

(column 6, lines 29-54), and for extracting from the adjacent line the encryption data

which is determined to be a first value or a second value according to a relation

between the first counter value and the second counter value; and a decrypting means

for decrypting the extracted the encryption data to an original watermark for output

(column 6, lines 55-64). Therefore, it would have been obvious to one having ordinary

skill in the art at the time the invention was made to use difference of averages to create

the digital watermark in the system of Braudaway. One of ordinary skill in the art would

have been motivated to perform such a modification to permit modification of the image

without losing the digital signature (Powell, column 1, lines 37-49).

Regarding claim 6, the combination of Braudaway and Powell teaches the

limitations as set forth under claim 5 above. Furthermore, Braudaway teaches wherein

said extracting means comprises: average calculating means for calculating the

average of the intensity values or the color difference values of the pixels in the

specified line of the digitally watermarked image signals (column 17, lines 5-44); counter

value calculating means for comparing the average with the intensity value or the color

difference value of each pixel in the adjacent line to calculate, for all pixels in the

adjacent line, the first counter value and the second counter value, said first counter

value indicating the number of pixels each of which has an intensity value or a color

difference value larger than the average, said second counter value indicating the

number of pixels each of which has an intensity value or a color difference value smaller

than the average (column 16, lines 31-67); counter value comparing means for

comparing the first counter value and the second counter value; and encryption data

extracting means for extracting the encryption data determined to be the first value

when said counter value comparing means gives a comparison result indicating that the

first counter value is larger than the second counter value or for extracting the

encryption data determined to be the second value (column 16, lines 31-67) when said

counter value comparing means gives a comparison result indicating that the first

counter value is smaller than the second counter value (column 21, lines 5-37).

Regarding claim 7, Braudaway teaches a digital watermark reproducing method

comprising: a first step for receiving digitally watermarked image signals as input signals

and for specifying a line of pixel data, said digitally watermarked image signals being

generated by transforming signals in a line adjacent to the specified line of the image

signals according to a value of encryption data generated by encrypting a digital

watermark (column 16, lines 1-30). Braudaway does not disclose expressly a second

step for comparing an average of intensity values or color difference values of all pixels

in the specified line in the digitally watermarked image signals with an intensity value or

a color difference value of each pixel in the adjacent line to find, for all pixels in the

adjacent line, a first counter value and a second counter value, said first counter value

indicating a number of pixels each of which has an intensity value or a color difference

value larger than the average, said second counter value indicating a number of pixels

each of which has an intensity value or a color difference value smaller than the

average; a third step for extracting from the adjacent line the encryption data which is

determined to be a first value or a second value according to a relation between the first

counter value and the second counter value; and a fourth step for decrypting the

extracted encryption data to an original watermark for output. However, Powell teaches

a second step for comparing an average of intensity values or color difference values of

all pixels in the specified line in the digitally watermarked image signals with an intensity

value or a color difference value of each pixel in the adjacent line (column 6, lines 12-

28) to find, for all pixels in the adjacent line, a first counter value and a second counter

value, said first counter value indicating a number of pixels each of which has an

intensity value or a color difference value larger than the average, said second counter

value indicating a number of pixels each of which has an intensity value or a color

difference value smaller than the average (column 6, lines 29-54); a third step for

extracting from the adjacent line the encryption data which is determined to be a first

value or a second value according to a relation between the first counter value and the

second counter value; and a fourth step for decrypting the extracted encryption data to

an original watermark for output (column 6, lines 55-64). Therefore, it would have been

obvious to one having ordinary skill in the art at the time the invention was made to use

difference of averages to create the digital watermark in the system of Braudaway. One

of ordinary skill in the art would have been motivated to perform such a modification to

permit modification of the image without losing the digital signature (Powell, column 1,

lines 37-49).

Regarding claim 8, the combination of Braudaway and Powell teaches the

limitations as set forth under claim 7 above. Furthermore, Braudaway teaches wherein

said second step comprises: a fifth step for calculating the average of the intensity

values or the color difference values of the pixels in the specified line of the digitally

watermarked image signals (column 17, lines 5-44); and a sixth step for comparing the

average with the intensity value or the color difference value of each pixel in the

adjacent line to calculate, for all pixels in the adjacent line, the first counter value and

the second counter value, said first counter value indicating the number of pixels each

of which has an intensity value or a color difference value larger than the average, said

second counter value indicating the number of pixels each of which has an intensity

value or a color difference value smaller than the average (column 16, lines 31-67), and

wherein said third step comprises: a seventh step for comparing the first counter value

and the second counter value; and an eighth step for extracting the encryption data

determined to be the first value when said seventh step gives a comparison result

indicating that the first counter value is larger than the second counter value or for

extracting the encryption data determined to be the second value (column 16, lines 31-

67) when said seventh step gives a comparison result indicating that the first counter

value is smaller than the second counter value (column 21, lines 5-37).

7.   Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Braudaway and Powell as applied to claim 1 above, and further in view of Abe (US

Patent Number: 6,580,804).

Regarding claim 9, the combination of **Braudaway** and Powell does not

expressly disclose wherein said specifying means specifies an edge line of pixel data

included in the received image signal. However, Abe teaches wherein said specifying

means specifies an edge line of pixel data included in the received image signal

(column 3, lines 20-55). Therefore, it would have been obvious to one having ordinary

skill in the art at the time the invention was made to place a digital watermark along the

edge of a digital image. One of ordinary skill in the art would have been motivated to do

so make the digital watermark more resistant to image processing and or image

deletion without an inordinate amount of calculation (Abe, column 1, lines 10-54).

Conclusion

8.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

9.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to David G. Cervetti whose telephone number is (571) 272-

5861. The examiner can normally be reached on Monday-Friday 7:00 am - 5:00 pm, off

on Wednesday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Ayaz R. Sheikh can be reached on (571) 272-3795. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Primary Examiner
AU2131
9/22/05

DGC